

CLAIMS

1. A moving picture coding method for coding a picture with switching between frame coding and field coding adaptively on a block-by-block basis, comprising an assignment step of assigning
5 field reference indices to fields using frame reference indices, the field reference indices specifying fields which are referred to at the time of field coding, and the frame reference indices specifying frames which are referred to at the time of frame coding.
- 10 2. The moving picture coding method according to Claim 1, further comprising a specification step of specifying two fields that make up each of the frames specified by each of the frame reference indices,
wherein in the assignment step, a first value is assigned to
15 one field having a parity same as a parity of a field including a current block to be coded, out of the specified two fields, as each of the field reference indices, the first value being obtained by doubling a value of said each of the frame reference indices, and a second value is assigned to another field having a parity different
20 from a parity of the field including the current block as said each of the field reference indices, the second value being obtained by adding one to said first value.
- 25 3. The moving picture coding method according to Claim 2, further comprising a determination step of determining a maximum number of the field reference indices to be a value obtained by doubling a maximum number of the frame reference indices,
wherein in the assignment step, the field reference indices
30 are assigned within a range of the determined maximum number.
4. The moving picture coding method according to Claim 1,

further comprising a specification step of specifying two fields that make up each of the frames specified by each of the frame reference indices, the two fields being a top field and a bottom field,

5 wherein in the assignment step, a first value is assigned to the top field, out of the specified two fields, as each of the field reference indices, the first value being obtained by doubling a value of said each of the frame reference indices, and a second value is assigned to the bottom field as said each of the field
10 reference indices, the second value being obtained by adding one to said first value.

5. The moving picture coding method according to Claim 1, further comprising a specification step of specifying two fields that
15 make up each of the frames specified by each of the frame reference indices,

 wherein in the assignment step, a value same as a value of said each of the frame reference indices is assigned only to one field having a parity same as a parity of a field including a current
20 block to be coded, out of the specified two fields, as each of the field reference indices.

6. The moving picture coding method according to Claim 1, further comprising an addition step of generating a command
25 sequence indicating how to assign the frame reference indices and a command sequence indicating how to assign the field reference indices independently, coding said two command sequences, and adding said coded command sequences to a coded signal.

30 7. The moving picture coding method according to Claim 1, wherein the field reference indices consist of top field reference indices and bottom field reference indices, and

said moving picture coding method further comprises an addition step of generating a command sequence indicating how to assign the frame reference indices, a command sequence indicating how to assign the top field reference indices and a
5 command sequence indicating how to assign the bottom field reference indices independently, coding said three command sequences, and adding said coded command sequences to a coded signal.

10 8. The moving picture coding method according to Claim 1, further comprising a determination step of determining a maximum number of the field reference indices,

wherein in the assignment step, the field reference indices are assigned to fields within a range of the determined maximum
15 number using the frame reference indices.

9. The moving picture coding method according to Claim 8, wherein in the determination step, the maximum number of the field reference indices is determined to be a value obtained by
20 doubling a maximum number of the frame reference indices.

10. The moving picture coding method according to Claim 8, wherein in the determination step, the maximum number of the field reference indices is determined to be a value same as a
25 maximum number of the frame reference indices.

11. The moving picture coding method according to Claim 8, further comprising an addition step of determining a maximum number of the frame reference indices independently of the
30 maximum number of the field reference indices, coding said two maximum numbers, and adding said coded maximum numbers to a coded signal.

12. The moving picture coding method according to Claim 8,
wherein the field reference indices consist of top field
reference indices and bottom field reference indices, and

5 said moving picture coding method further comprises an
addition step of determining a maximum number of the frame
reference indices, a maximum number of the top field reference
indices and a maximum number of the bottom field reference
indices independently, coding said three maximum numbers, and
10 adding said coded maximum numbers to a coded signal.

13. A moving picture decoding method for decoding a picture
with switching between frame decoding and field decoding
adaptively on a block-by-block basis, comprising an assignment
15 step of assigning field reference indices to fields using frame
reference indices, the field reference indices specifying fields which
are referred to at the time of field decoding, and the frame
reference indices specifying frames which are referred to at the
time of frame decoding.

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14. The moving picture decoding method according to Claim 13,
further comprising a specification step of specifying two fields that
make up each of the frames specified by each of the frame
reference indices,

25 wherein in the assignment step, a first value is assigned to
one field having a parity same as a parity of a field including a
current block to be decoded, out of the specified two fields, as each
of the field reference indices, the first value being obtained by
doubling a value of said each of the frame reference indices, and a
30 second value is assigned to another field having a parity different
from a parity of the field including the current block as said each of
the field reference indices, the second value being obtained by

adding one to said first value.

15. The moving picture decoding method according to Claim 14,
further comprising a determination step of determining a
5 maximum number of the field reference indices to be a value
obtained by doubling a maximum number of the frame reference
indices,

wherein in the assignment step, the field reference indices
are assigned within a range of the determined maximum number.

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16. The moving picture decoding method according to Claim 13,
further comprising a specification step of specifying two fields that
make up each of the frames specified by each of the frame
reference indices, the two fields being a top field and a bottom
15 field,

wherein in the assignment step, a first value is assigned to
the top field, out of the specified two fields, as each of the field
reference indices, the first value being obtained by doubling a
value of said each of the frame reference indices, and a second
20 value is assigned to the bottom field as said each of the field
reference indices, the second value being obtained by adding one
to said first value.

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17. The moving picture decoding method according to Claim 13,
25 further comprising a specification step of specifying two fields that
make up each of the frames specified by each of the frame
reference indices,

wherein in the assignment step, a value same as a value of
said each of the frame reference indices is assigned only to one
30 field having a parity same as a parity of a field including a current
block to be decoded, out of the specified two fields, as each of the
field reference indices.

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18. The moving picture decoding method according to Claim 13, further comprising a command sequence decoding step of decoding a coded signal including a command sequence indicating how to assign the frame reference indices and a command sequence indicating how to assign the field reference indices,

wherein in the assignment step, the frame reference indices and the field reference indices are assigned according to said two decoded command sequences.

19. The moving picture decoding method according to Claim 13, wherein the field reference indices consist of top field reference indices and bottom field reference indices,

said moving picture decoding method further comprises:

a command sequence decoding step of decoding a coded signal including a command sequence indicating how to assign the frame reference indices, a command sequence indicating how to assign the top field reference indices and a command sequence indicating how to assign the bottom field reference indices, and

in the assignment step, the frame reference indices, the top field reference indices and the bottom field reference indices are assigned according to said three decoded command sequences.

20. The moving picture decoding method according to Claim 13, further comprising a determination step of determining a maximum number of the field reference indices,

wherein in the assignment step, the field reference indices are assigned to fields within a range of the determined maximum number using the frame reference indices.

21. The moving picture decoding method according to Claim 20, wherein in the determination step, the maximum number of

the field reference indices is determined to be a value obtained by doubling a maximum number of the frame reference indices.

22. The moving picture decoding method according to Claim 20,
5 wherein in the determination step, the maximum number of the field reference indices is determined to be a value same as a maximum number of the frame reference indices.

23. The moving picture decoding method according to Claim 20,
10 wherein in the determination step, a maximum number of the frame reference indices and the maximum number of the field reference indices are determined by decoding a coded signal including said two maximum numbers.

24. The moving picture decoding method according to Claim 20,
15 wherein the field reference indices consist of top field reference indices and bottom field reference indices, and
in the determination step, a maximum number of the frame reference indices, a maximum number of the top field reference
20 indices and a maximum number of the bottom field reference indices are determined by decoding a coded signal including said three maximum numbers.

25. A moving picture coding apparatus for performing coding
25 with switching between frame coding and field coding adaptively on a block-by-block basis in a picture, comprising an assignment unit operable to assign field reference indices to fields using frame reference indices, the field reference indices specifying fields which are referred to at the time of field coding, and the frame reference
30 indices specifying frames which are referred to at the time of frame coding.

26. A moving picture decoding apparatus for performing decoding with switching between frame decoding and field decoding adaptively on a block-by-block basis in a picture, comprising:

5 an assignment unit operable to assign field reference indices to fields using frame reference indices, the field reference indices specifying fields which are referred to at the time of field decoding, and the frame reference indices specifying frames which are referred to at the time of frame decoding; and

10 a decoding unit operable to decode the frames specified by the frame reference indices or the fields specified by the field reference indices.

27. A program for causing a computer to execute a moving
15 picture coding method for performing coding with switching between frame coding and field coding adaptively on a block-by-block basis in a picture, the program causing the computer to assign field reference indices to fields using frame reference indices, the field reference indices specifying fields which
20 are referred to at the time of field coding, and the frame reference indices specifying frames which are referred to at the time of frame coding.

28. A program for causing a computer to execute a moving
25 picture decoding method for performing decoding with switching between frame decoding and field decoding adaptively on a block-by-block basis in a picture, the program causing the computer to assign field reference indices to fields using frame reference indices, the field reference indices specifying fields which
30 are referred to at the time of field decoding, and the frame reference indices specifying frames which are referred to at the time of frame decoding.